

# ATTACHMENT G

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## LIST OF SUPPLEMENTS

### SUPPLEMENT

### TITLE

G-1

Engineering Details and Technical Specifications for Structures, Coatings, Liners, PermaCon<sup>®</sup>, Metal Pallets, and Secondary Containment Pallets at the Area L, Area G, and TA-54 West Container Storage Units

## LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
CFR	Code of Federal Regulations
CMP	corrugated metal pipe
CSU	container storage unit
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DVRS	Decontamination and Volume Reduction System
FRP	fiberglass-reinforced plywood
ft	feet/foot
ft <sup>2</sup>	square feet/foot
HDPE	high-density polyethylene
HEPA	high-efficiency particulate air
LACFD	Los Alamos County Fire Department
LANL	Los Alamos National Laboratory
m <sup>3</sup>	cubic meters
MLLW	mixed low-level waste
MSDS	Material Safety Data Sheet
MTRUW	mixed transuranic waste
PPE	personal protective equipment
ppmw	parts per million by weight
PTLA	Protection Technology Los Alamos
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
TA	technical area
TRU	transuranic
UV	ultraviolet

## **ATTACHMENT G**

### **CONTAINER MANAGEMENT**

The information provided in this attachment addresses the applicable container storage requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC ), § 270.15, and 20.4.1 NMAC , Subpart V, Part 264, Subpart I, revised June 14, 2000 [6-14-00]. This attachment provides an overview of current facility operations and waste management practices at Technical Area (TA) 54 at Los Alamos National Laboratory (LANL) and complements the information provided in Section 2.0 of this permit renewal application. It includes detailed descriptions of the TA-54 container storage units (CSU) and the current waste management practices associated with them. Detailed drawings are included in this attachment. Other detailed information (e.g., technical specifications for prefabricated sheds, coatings, liners) is provided in Supplement G-1 of this attachment, and is provided for informational purposes only. Table G-1 summarizes applicable regulatory references and the corresponding location where the requirement is addressed in this permit renewal application.

#### **G.1 GENERAL FACILITY OPERATIONS AND WASTE MANAGEMENT PRACTICES [20.4.1 NMAC, Subpart V, Part 264, Subpart I]**

TA-54 consists of 130 acres atop Mesita del Buey and is used for storage of hazardous and mixed waste generated throughout LANL. A principal mission of TA-54 is to manage LANL waste safely and efficiently, consistent with federal and state regulations and U.S. Department of Energy (DOE) requirements. TA-54 has three separate areas where hazardous and/or mixed waste is stored; the three areas include Area L, Area G, and TA-54 West (Figure G-1). There are two CSUs at Area L, nine CSUs at Area G, and two CSUs at TA-54 West. These CSUs are described in Sections G.2, G.3, and G.4.

The following provides an overview of current facility operations and waste management practices that are applicable to the CSUs at TA-54. This overview includes a discussion of container handling and inspection; security and access control; preparedness and prevention; hazards prevention; special requirements for ignitable, reactive, or incompatible waste; and air emission standards for containers. Similar information specific to the Area L, Area G, and TA-54 West CSUs is provided in Sections G.2, G.3, and G.4 of this attachment. This information is submitted to fulfill the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart I [6-14-00]. Specific waste management practices and procedures detailed herein are subject to change.

G.1.1 Container Handling and Inspection [20.4.1 NMAC §§ 264.171, 264.173, and 264.174]

Handling and inspection requirements for containers stored within the TA-54 CSUs are presented in Sections 2.5 and 2.7, respectively, of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC §§ 264.171, 264.173, and 264.174 [6-14-00].

G.1.2 Security and Access Control [20.4.1 NMAC §§ 270.14(b)(4) and 270.14(b)(19)(viii); 20.4.1 NMAC § 264.14]

The CSUs at TA-54 are provided security by both their locations on top of Mesita del Buey and by 8-foot (ft) industrial chain-link fences topped by razor wire or barbed wire. Additional security is provided by a system of facility access controls to ensure that only authorized personnel are granted access. These access controls also ensure that all facility personnel can be identified and located in an emergency.

Depending on national security conditions, a guard station will be manned west of the TA-54 timed vehicle-access control gate. During intervals of high national security, it is currently planned that guard stations will also control public access on Pajarito Road east and west of TA-54. Therefore, only properly identified LANL and DOE employees or individuals under their escort will have access to TA-54 during those times.

During low national security conditions, any access to the TA-54 administrative area for Areas L and G is limited by a timed vehicle-access control gate on the entrance road to TA-54. This gate is open during normal working hours from 6:00 a.m. to 6:30 p.m., Monday through Friday (except holidays). Gate hours are subject to change. Access to TA-54 West is by a manually operated gate on the west side of the facility. The gate is also open during normal working hours. Access to any part of TA-54 before or after normal working hours or on weekends requires approval of the appropriate Group Leader or Facility Manager at TA-54. TA-54 is patrolled by Protection Technology Los Alamos (PTLA) security personnel during non-operational hours to ensure that the gates are locked and that unauthorized entry has not occurred.

Anyone entering the fenced Area L and Area G waste management areas from the TA-54 administrative area must be "badged in" via access control at TA-54-245 before proceeding. Badging in is the process of identifying the person, assessing his/her security and training status using DOE security badges, and determining the need for an escort. Authorized personnel may

enter the fenced portions of Areas L and G only after negotiating additional access controls in the form of walk-through turnstiles and motorized vehicle gates. Each turnstile and vehicle gate is equipped with a badge reader to ensure authorized access only.

Resident personnel are required to badge in upon arrival and prior to leaving TA-54, Areas L and G, and TA-54 West. Nonresident personnel and visitors are required to badge or sign in and out at an access control point. Depending on their level of training, nonresident personnel may be required to be escorted in order to access TA-54, Areas L and G, and TA-54 West. Access to the Area L, Area G, and TA-54 West CSUs requires additional controls. These controls are described in Sections G.2.1, G.3.1, and G.4.1, respectively.

G.1.3 Preparedness and Prevention [20.4.1 NMAC, Subpart V, Part 264, Subpart C; and 20.4.1 NMAC § 270.14(b)(8)]

The following presents information on the waste management techniques used at TA-54 to comply with the preparedness and prevention requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart C [6-14-00]. This includes a discussion of the emergency equipment required at the facility, testing and maintenance of this equipment, personnel access to communications or alarm systems, aisle space and storage configuration, and support agreements with outside agencies. Each CSU at TA-54 has been or will be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment, in accordance with 20.4.1 NMAC § 264.31.

G.1.3.1 Required Equipment [20.4.1 NMAC § 264.32]

Emergency equipment is located throughout TA-54 and includes internal communications, alarm systems, fire alarms, spill kits, and decontamination equipment. Detailed information on the required emergency and safety equipment located at the Area L, Area G, and TA-54 West CSUs is provided in Sections G.2.2, G.3.2 and G.4.2, respectively. For additional information, see Tables E-1, E-2, and E-3 in Attachment E of this permit renewal application.

G.1.3.2 Testing and Maintenance of Equipment [20.4.1 NMAC § 264.33]

The communication, alarm system, fire protection, spill control, and decontamination equipment located within TA-54 is inspected and/or tested according to the inspection schedule detailed in Appendix C in the most recent version of the "Los Alamos National Laboratory General Part B

Permit Application,” hereinafter referred to as the LANL General Part B. Maintenance, repair, and replacement of emergency equipment are performed, as needed.

#### G.1.3.3 Access to Communications or Alarm System [20.4.1 NMAC § 264.34]

All personnel involved in waste management activities at TA-54 have immediate access to internal alarms or emergency communication devices, either directly or through visual or voice contact with another individual. These devices include fire alarms, evacuation alarms, paging telephones, radios, and cellular telephones. The nature and locations of these devices are specific to the Area L, Area G, and TA-54 West CSUs. Detailed information for Area L, Area G, and TA-54 West is provided in Sections G.2.2, G.3.2, and G.4.2, respectively.

#### G.1.3.4 Aisle Space and Storage Configuration [20.4.1 NMAC § 264.35]

Information on aisle space and storage configurations for the TA-54 CSUs is presented in Sections 2.1.1.3, 2.1.2.3, and 2.1.3.3 of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC § 264.35 [6-14-00].

#### G.1.3.5 Support Agreements with Outside Agencies [20.4.1 NMAC § 264.37(a)]

DOE maintains support agreements and contracts with outside agencies for emergency response assistance. Information regarding these contracts and support agreements is provided in Section 2.1.2.4 of the LANL General Part B.

#### G.1.4 Hazards Prevention [20.4.1 NMAC, Subpart V, Part 264, Subpart C; 20.4.1 NMAC § 270.14(b)(8)]

The following discusses the general procedures, equipment, and structures that are currently used at TA-54 to prevent hazards. This includes preventing hazards during unloading of waste containers, preventing run-on and runoff, preventing contamination of the water supply, mitigating the effects of power outages, preventing undue exposure to personnel, and preventing releases to the atmosphere.

##### G.1.4.1 Preventing Hazards in Unloading [20.4.1 NMAC § 270.14(b)(8)(i)]

Waste containers are transported to the Area L, Area G, and TA-54 West CSUs by flatbed trucks, closed-box trucks, or trailers. The CSUs have design features that promote safe unloading and handling of waste containers from these trucks and trailers. Ramps are typically located at the vehicle entrances to the dome structures at the Area L and Area G CSUs. Shed 31 at Area L and Shed 8 at Area G have sloped entryways for container-handling equipment. The storage domes

have roll-up or roll-away vehicle access doors. The loading dock at TA-54 West allows access from the transport vehicles to the loading dock platform. These design features facilitate safe handling of containers in and out of the CSUs.

All waste containers at the TA-54 CSUs are handled in a manner that will not cause them to rupture or leak, as required in 20.4.1 NMAC § 264.173(b) [6-14-00]. Most containers are handled with forklifts (using drum grapplers, when appropriate) and are placed directly in the appropriate CSU. For larger containers, personnel can use a boom or, at TA-54 West and in portions of Area L, a bridge crane or mobile crane, respectively. At TA-54-412, waste containers (FRP crates, drums, and large boxes) are generally handled with forklifts, overhead cranes, and frictionless air pallets. Smaller containers are generally handled manually or with drum dollies. The use of proper handling equipment, appropriate to a container's size and weight, helps to prevent hazards while moving containers (e.g., when loading and unloading containers).

#### G.1.4.2 Preventing Run-on and Runoff [20.4.1 NMAC § 270.14(b)(8)(ii)]

Run-on and runoff control methods for the TA-54 CSUs are presented in Section 2.10 of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC § 270.14(b)(8)(ii) [6-14-00].

#### G.1.4.3 Preventing Water Supply Contamination [20.4.1 NMAC § 270.14(b)(8)(iii)]

It is not anticipated that there will be any impact to groundwater or other water supplies as a result of routine waste-handling operations at TA-54 because engineering and operational controls ensure that run-on and runoff are minimized. Containers are stored inside structures or with second containment, as necessary. Water supply lines are under pressure and are equipped with backflow prevention devices. Therefore, no impact to water supplies as a result of storage at the TA-54 CSUs is expected.

The depth to groundwater is approximately 890 ft (Ball et. al., 2002, p. 30), and no perched aquifers have been identified beneath Mesita del Buey (LANL, 1998, p. 4-59). In 1985, test wells were installed in the canyons north and south of TA-54 to determine if perched water exists within canyon alluvium, to determine if perched water extends beneath Mesita del Buey, and to sample/monitor perched water, if present. Three test wells were installed in a tributary to Cañada del Buey; they include CDBO-1, CDBO-2, and CDBO-3. Test well CDBO-4 was installed further to the east in Cañada del Buey (see Figures 2-1 and 2-3 in Section 2.0). All four wells were dry; however, they

were completed as observation wells to monitor the alluvium for possible water in the future (LANL, 1995, pp. 116 and 127-128).

Three test wells were installed in Pajarito Canyon; they are PCO-1, PCO-2, and PCO-3 (LANL, 1995, pp. 116 and 129) (see Figures 2-1 and 2-3 in Section 2.0). These three wells are sampled annually for radionuclides, metals, and general inorganics; they are sampled triennially for organics. Sampling results are compiled annually in environmental surveillance reports and submitted to the New Mexico Environment Department. To ensure that the alluvial aquifer in Pajarito Canyon did not extend northward beneath Mesita del Buey, four test holes were drilled in the canyon floor north of the intermittent stream channel. These four test holes, designated PCM-1, PCM-2, PCM-3, and PCM-4, were dry. They were completed for use as moisture-access holes (LANL, 1995, pp. 115 and 130). It was concluded that perched water in Pajarito Canyon is confined to the alluvium in the stream channel and does not extend to the flank of the canyon (LANL, 1995, p. 113).

Five observation wells were installed in Cañada del Buey, mostly up-gradient from Area L, as part of a 1992 investigation for a proposed sanitary wastewater treatment plant. These wells, installed to study the effect of effluent release on the environment in the canyon, are CDBO-5, CDBO-6, CDBO-7, CDBO-8 and CDBO-9. In addition, two moisture-access holes (CDBM-1 and CDBM-2) were drilled north of Area L in 1992. Perched water was encountered in the canyon alluvium at wells CDBO-6 and CDBO-7. It was determined that the perched water at these locations is likely the result of operational discharges from well PM-4 (LANL, 1995, p. 114).

Regional well R-22, located on Mesita del Buey just east of Area G, was drilled to a total depth of 1,489 ft in 2000. Two potential perched zones and one regional zone of saturation were originally predicted at well R-22. The two zones that could potentially support perched water were predicted at a depth of 148 ft in the Cerros del Rio basalt and at a depth of 487 ft in the Puye Formation; the regional water table was anticipated to be at a depth of 922 ft in the Puye Formation. No water was encountered until the drillers first noted water at a depth of approximately 890 to 900 ft. The water is believed to be associated with the regional zone of saturation because the regional water table was projected to be at a similar depth, no obvious perching horizon was encountered, and saturation continued from 900 ft to the total depth drilled.

Regional well R-21, located in Cañada del Buey just north of Mesita del Buey, was drilled in 2002. A report describing this well will be provided to the NMED upon completion.

#### G.1.4.4 Mitigating Effects of Power Outages [20.4.1 NMAC § 270.14(b)(8)(iv)]

Electrical power is supplied to the structures at TA-54 to operate evacuation alarms, lighting, and various types of monitoring equipment. Battery backup systems (uninterruptible power systems) are provided at Areas G and L for the emergency evacuation alarm, which will continue to operate for eight hours. TA-54-412 has a backup generator that will provide electricity to the Decontamination and Volume Reduction System (DVRS) operations and its monitoring equipment to allow workers to safely cease operations and exit the building. TA-54-33 and TA-54-412 at Area G and TA-54-39 and TA-54-215 at Area L have battery-powered emergency lighting. Operations in each CSU are discontinued if the electrical power is not restored quickly. Specific procedures and contingencies have been developed to handle power outages at the Area L, Area G, and TA-54 West CSUs. These include the procedure to exit domes when electricity goes out. When power is restored, performance tests on monitoring equipment are conducted to ensure they are operating properly prior to allowing any workers to return to the domes. Based on the TA-54 procedures, the loss of electricity will not affect secondary containment or significantly affect health and safety issues.

TA-54 has a Maintenance Implementation Plan that addresses maintenance implementation for equipment associated with all facility operations. The plan provides the basis for planning, scheduling, and coordinating preventive and/or corrective maintenance to keep equipment associated with all facility operations in proper working order.

#### G.1.4.5 Preventing Undue Exposure [20.4.1 NMAC § 270.14(b)(8)(v)]

Personnel at the TA-54 CSUs are required to use appropriate personal protective equipment (PPE) to protect themselves from the hazards found in the workplace under normal conditions. Use of PPE protects workers from direct contact with and inhalation or ingestion of hazardous materials. At TA-54, PPE is used routinely during waste-handling operations and when responding to unusual hazardous situations. The different levels of PPE are defined by the Occupational Safety and Health Administration as follows:

- *Level D:* Coveralls; safety boots; safety glasses or goggles; hard hat; and appropriate gloves
- *Level C:* Full-face, air-purifying respirator with appropriate cartridges for the chemicals or hazards present; chemical-resistant suits; chemical-resistant safety boots or booties; and inner and outer gloves

- *Level B:* All Level C equipment plus self-contained breathing apparatus in place of a Level C full-face respirator
- *Level A:* All Level B equipment, plus a fully-encapsulating chemical-resistant suit.

Most waste-handling operations at the TA-54 CSUs require that personnel handling wastes or working in the CSUs wear modified Level D PPE, depending on the associated work hazards identified in job-specific hazard control plans. Modified Level D may include any item in Level D. There are instances where an increased level of PPE is required, such as during an emergency or unusual hazardous situation. If a situation arises during an emergency and an increased level of PPE is required, the PPE will be compatible with the wastes present. All personnel that use PPE are trained and qualified to use the equipment properly.

All personnel involved in waste-handling operations in the TA-54 CSUs are required to have training appropriate for their work. Training requirements are presented in Attachment D of this permit renewal application and in Appendix D of the LANL General Part B. Personnel are also required to review job hazards prior to performing waste-handling activities. Sampling plans, hazard control plans (which address monitoring equipment), and work authorizations are required, in accordance with LANL safety procedures. Personal monitoring equipment is established using the job hazard review process. Together, the required training, plans, and work authorizations help to prevent undue exposure to personnel.

#### G.1.4.6 Preventing Releases to the Atmosphere [20.4.1 NMAC § 270.14(b)(8)(vi)]

Releases to the atmosphere are limited at the TA-54 CSUs because containers are kept closed during storage. In routine hazardous waste and mixed low-level waste (MLLW) operations, the only exceptions to this practice are when, upon inspection, it is determined that a container currently in storage needs to be overpacked or repackaged in a new container, or during waste characterization or verification activities.

For MLLW and mixed transuranic waste (MTRUW), operations at TA-54-412 are contained in a pre-engineered metal structure to provide containment. An external secondary confinement structure surrounds the internal primary confinement structure. Both primary and secondary confinement structures are equipped with an air filtration system that includes a high-efficiency particulate air (HEPA) ventilation system to prevent the release of particulates to the environment.

The transuranic waste characterization facilities on Pad 10 (former Pads 2 and 4) will include glove boxes and hoods for managing mixed waste. The transuranic waste characterization facilities transportainers will provide external confinement for those operations. The equipment and the transportainers will have HEPA filtration systems to contain potential releases.

MTRUW containers are vented with one or more filters to allow any gases that are generated by radiolytic and microbial processes within a waste container to escape, thereby preventing over pressurization within the container. The HEPA-grade vent filters prevent the escape of any radioactive particulates.

G.1.5 Special Requirements for Ignitable, Reactive, or Incompatible Waste [20.4.1 NMAC §§ 264.17(a), 264.176, and 264.177(a)(b) and (c); 20.4.1 NMAC § 270.14(b)(9)]

Special requirements for ignitable, reactive, or incompatible waste at the TA-54 CSUs are presented in Section 2.8 of this permit renewal application. This information is provided to meet the requirements of 20.4.1 NMAC §§ 264.17(a), 264.176, and 264.177(a)(b) and (c); and 20.4.1 NMAC §§ 270.14(b)(9) and 270.15(d) [6-14-00].

G.1.6 Air Emission Standards for Containers [40 CFR, Part 264, Subpart CC]

The hazardous wastes stored in containers at TA-54 may be subject to 20.4.1.500 NMAC (incorporating the Code of Federal Regulations [CFR], Title 40, Part 264, Subpart CC, "Air Emission Standards for Tanks, Surface Impoundments, and Containers") based on the applicability criteria specified in 40 CFR § 264.1080. Subpart CC standards for containers, as currently set forth by the U.S. Environmental Protection Agency, require that containers of hazardous waste be covered so that there are no detectable emissions of volatile organic compounds to the air. Inspection and monitoring requirements are also specified.

As indicated in 40 CFR § 264.1080(b)(6), these standards are not currently applicable to containers that are used solely for management of radioactive mixed waste in accordance with all regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act. The standards are also not applicable to containers of hazardous waste with less than 500 parts per million by weight (ppmw) volatile organics, containers of less than 0.1 cubic meters (m<sup>3</sup>) (approximately 26 gallons) capacity, or that have received waste prior to the effective date of the regulation (December 6,

1996). The following management standards apply for hazardous wastes managed at LANL that do not meet any of the exemptions listed in 40 CFR §264.1080(b).

LANL requires that Subpart CC requirements be evaluated by the generator as part of the waste characterization process. Generator information is used to determine whether the concentration of volatile organics in a waste stream at the point of generation is less than 500 ppmw, or is equal to or greater than 500 ppmw, which is the threshold concentration for Subpart CC requirements. The generator documents this determination for that waste stream. In the event that this information is not available, the waste will be characterized in accordance with Appendix B of the LANL General Part B prior to being received by TA-54. Any hazardous waste that is newly-generated through the treatment or re-characterization of mixed waste at TA-54 will be characterized for the volatile organic content in accordance with Appendix B.

Three levels of air emission controls based on container design capacity are established in 40 CFR § 264.1086(b). TA-54 hazardous waste storage procedures require Level 1 controls based upon container design capacities. Containers of greater than 0.1 m<sup>3</sup> and less than 0.46 m<sup>3</sup> (approximately 119 gallons) capacity and that meet U.S. Department of Transportation (DOT) specifications under 49 CFR, Part 178, are kept closed during storage pursuant to 40 CFR § 264.1086(c)(3). Containers undergoing waste characterization activities may be opened for access for the purposes described in 40 CFR § 264.1086(c)(3). As required by 40 CFR § 264.1086(c)(4), these containers are subject to a visual inspection and monitoring program. On or before acceptance of the waste container at TA-54, the container is inspected to check for visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position, in accordance with 40 CFR § 264.1086(c)(1)(ii). This inspection is documented in uniform hazardous waste manifests. Pursuant to the Inspection Plan in Appendix C of the LANL General Part B, containers are inspected weekly at TA-54 to ensure that the containers remain closed during storage, thereby exceeding the requirements of 40 CFR § 264.1086(c)(4)(ii).

## G.2 AREA L CONTAINER STORAGE UNITS [20.4.1 NMAC, Subpart V, Part 264, Subpart I]

The following provides specific information on current facility operations and waste management practices at the two Area L CSUs. This includes a discussion of security and access control, preparedness and prevention, hazards prevention, and design information for the Area L CSUs.

This information is submitted to fulfill the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart I [6-14-00]. Detailed information is subject to change.

G.2.1 Security and Access Control [20.4.1 NMAC §§ 270.14(b)(4) and 270(b)(19)(viii); 20.4.1 NMAC § 264.14]

Security at the Area L CSUs is maintained by both artificial and natural barriers. These barriers prevent unauthorized entry of persons or livestock into Area L and satisfy the requirements of 20.4.1 NMAC §§ 264.14(a) and 264.14(b)(2) [6-14-00]. An 8-ft-high chain-link security fence with razor or barbed wire at the top surrounds the entire perimeter of Area L. Bilingual (i.e., English and Spanish) warning signs are posted on the fence at 50- to 75-ft intervals and can be seen from any approach to this area. The legends on the signs indicate "Danger—Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are legible from a distance of 25 ft. The security fence is inspected by on-site personnel and repairs are made, as necessary. An entry gate and station are located on Mesita del Buey Road at the west central portion of Area L. In accordance with 20.4.1 NMAC § 270.14(b)(19)(viii) [6-14-00], the locations of the security fence, entry gates, and entry stations are shown on Figure 2-1 in Section 2.0 of this permit renewal application. Cliffs on the north and south sides of Area L provide additional security as a natural barrier to discourage unauthorized entry.

Access to the Area L CSUs is controlled by a gate. Authorized resident personnel must badge in/out at the magnetic badge reader to enter or leave through the gate. Individuals who do not have a DOE-issued badge must be escorted after signing the visitor's log located in the administrative area's access control building. These procedures limit access to the Area L CSUs and provide a means of tracking personnel on site, should there be an emergency or evacuation.

G.2.2 Preparedness and Prevention [20.4.1 NMAC, Subpart V, Part 264, Subpart C; and 20.4.1 NMAC § 270.14(b)(8)]

The following presents information on the emergency equipment available at the Area L CSUs to comply with the preparedness and prevention requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart C [6-14-00]. This includes the approximate locations of fire extinguishers, shower/eyewash stations, spill kits, windsocks, and communication/alarm systems.

Required Equipment [20.4.1 NMAC § 264.32]

Area L is equipped with an audible alarm system to alert personnel of a fire or the need to evacuate the area. This alarm can be activated by pulling a fire alarm or by pushing the evacuation alarm

button. These alarms are located throughout Area L and are connected to the Los Alamos County Fire Department (LACFD) through LANL's central alarm system at all times. In addition to the alarms, there are numerous telephones located in and around the structures within Area L. These telephones ensure that personnel can contact on-site and LANL emergency personnel at all times. Many of these telephones also serve as emergency paging phones so that information can be announced throughout the area. Windsocks are also located at strategic locations to indicate wind direction and strength.

Fire control equipment at Area L includes fire extinguishers (halon, water, carbon dioxide, and/or dry chemical), a dry-pipe sprinkler system, and dry chemical systems. The fire extinguishers are available at or near most structures within Area L for use by on-site personnel, depending on the size and fuel source of a fire. Dome 215 has an automatic dry-pipe sprinkler system that is heat activated in the event of a fire. Storage Sheds 68, 69, and 70 have dry chemical systems. Fire hydrants are located near TA-54-37 and the southeast corner of TA-54-62. The fire hydrants supply water at an adequate volume and pressure to satisfy the requirements of 20.4.1 NMAC § 264.32 [6-14-00].

Personal decontamination equipment at Area L includes emergency eyewash stations and showers. This equipment is for use by personnel in emergencies involving chemical and/or radiological materials. These stations are generally located near or inside structures where waste is being handled. Emergency shower and eyewash stations are currently located at or near TA-54-39, TA-54-31, TA-54-215, TA-54-216, and TA-54-35. Waste characterization documentation and/or Material Safety Data Sheets (MSDS) are also available in the event of a chemical exposure.

There are several spill kits available at Area L to mitigate small containable spills. These kits typically contain sorbents, neutralizers, PPE, and other equipment essential for containment of small spills. Trained personnel use the spill kits only if they know what has been spilled and they are sure their actions will not put themselves or others at risk. In addition to the spill kits, shovels for cleanup are stored in TA-54-46. Oversized drums and sorbents are also stored at various locations throughout Area L. For larger spills or other unusual hazardous situations, a variety of equipment is available to emergency personnel. This equipment includes forklifts, self-propelled loaders, and other heavy equipment from Area G.

G.2.3 Hazards Prevention [20.4.1 NMAC, Subpart V, Part 264, Subpart C; 20.4.1 NMAC § 270.14(b)(8)]

The Area L CSUs are designed and operated to minimize the possibility of a fire, explosion, or any unplanned releases of hazardous wastes or hazardous waste constituents which could threaten human health or the environment. The following discusses the procedures, equipment, and structures that are used at Area L to mitigate the effects of power outages. Prevention of run-on and runoff at Area L is discussed in Section 2.10.1 of this permit renewal application.

Mitigating Effects of Power Outages [20.4.1 NMAC § 270.14(b)(8)(iv)]

Electrical power is supplied to Area L to operate evacuation alarms, lighting, and various types of monitoring equipment. Operations at Area L are discontinued if the electrical power is not restored quickly or if there is the possibility of an ignition. A power failure will not affect containment at the Area L CSUs.

G.2.4 Area L CSUs [20.4.1 NMAC § 270.15]

The following describes the two CSUs at Area L (see Figure 2-1). The two CSUs are the aboveground CSU within the fence and the Storage Shafts CSU. The aboveground CSU within the fence is comprised of several storage structures (TA-54-215; TA-54-216; Storage Sheds 68, 69, and 70; Storage Shed 31; TA-54-32; TA-54-35; TA-54-36; TA-54-58; and TA-54-39) and the asphaltic concrete-covered area. General dimensions, containment features, and materials of construction are discussed in this section to fulfill the requirements of 20.4.1 NMAC §§ 270.15(a)(1) and (2) [6-14-00].

G.2.4.1 Aboveground CSU within the Fence

The aboveground CSU within the fence stores containers of hazardous waste and MLLW in solid and liquid form. Liquid wastes are stored primarily in structures that are designed for secondary containment; however, secondary containment pallets are also used. Secondary containment pallets are typically constructed of polyethylene or metal painted with a chemical-resistant coating (see Supplement G-1 for additional details, including compatibility). Polyethylene secondary containment pallets used at TA-54 are generally 50 inches long by 50 inches wide by 17 inches deep, with a designed capacity of 83 gallons. Currently, two sizes of metal secondary containment pallets are used at TA-54. One is 52 inches long by 52 inches wide by 6.5 inches deep, with a designed capacity of 57 gallons; the other is 60 inches wide by 60 inches long by 6.5 inches deep,

with a designed capacity of 77 gallons. The metal secondary containment pallets are coated with chemically-resistant urethane.

The stressed- or tensioned-membrane fabric used on Storage Dome 215 and Canopy 216 at the aboveground CSU within the fence at Area L are similar. This fabric is coated with ultraviolet (UV)-stabilized plasticized polyvinyl chloride (PVC). It is fungus-resistant and certified flame-retardant (i.e., self-extinguishing). See Supplement G-1, SPRUNG Instant Structures, for additional details.

### Storage Dome 215

Storage Dome 215 (TA-54-215) is 60 ft wide, approximately 266 ft long, and 26 ft high (see Figure G-2). It is an arch frame-supported stressed-membrane structure. The dome is of modular construction and uses light construction materials (i.e., aluminum framework with membrane/fabric covering). It is equipped with 14 personnel doors and two roll-up doors. The dome's pad is equipped with a 6-inch-high, 8-inch-wide concrete ring wall that surrounds the perimeter of the dome, and the dome is anchored to the concrete ring wall with anchor bolts. A ramp is located at the vehicle entrance to the dome and allows vehicles and container handling equipment to pass safely over the ring wall. The ring wall and the ramp prevent run-on into the dome. Any liquid that might accumulate within the storage dome (e.g., liquids resulting from fire-suppression activities) is contained within the ring-walled area. Liquid that may result from fire-suppression activities and that is in excess of the capacity inside the ring wall is collected in a double-walled holding tank connected to TA-54-215 by a double-walled pipe.

All waste containers at TA-54-215 are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. All liquid wastes are stored on secondary containment pallets that have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any accumulated liquids are removed and collected for characterization as described in Section 2.6 of this permit renewal application.

### Canopy 216

Canopy 216 (TA-54-216) is approximately 33 ft wide and 120 ft long (see Figure G-3). This storage structure consists of a rigid aluminum frame that supports a tensioned membrane. A series of aluminum I-beam trusses, spanning the width of the structure, comprise its framework. The

membrane is integrally connected to the frame to provide a fully-tensioned fit for the roof and one side of the structure. The membrane on the remaining three sides of the structure can be rolled down to provide further containment or protection from the weather. The canopy frame is anchored to a sloped asphaltic-concrete pad.

All waste containers at TA-54-216, including gas cylinders, are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers, baskets) to prevent contact with accumulated liquids. All liquid wastes are stored on secondary containment pallets that have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any accumulated liquids are removed and collected for characterization as described in Section 2.6 of this permit renewal application.

#### Storage Sheds 68, 69, and 70

Storage sheds 68, 69, and 70 are prefabricated sheds constructed of steel (see Supplement G-1, Safety Storage Building, Model 22). Each shed measures approximately 23 ft long, 9 ft wide, and 8.5 ft high. Access to these storage sheds is obtained through one of three sets of double doors. Storage Shed 68 has three separate compartments, with one door leading to each compartment. Storage Sheds 69 and 70 each have two separate compartments, with one door leading to the smaller compartment and two doors leading to the larger compartment. The sheds are elevated by design, which prevents run-on.

Each shed is constructed with liquid-tight sumps to ensure containment of any potential leaks or spills and to prevent runoff. The floor of each shed consists of a metal grate that covers the sump areas. Containers are placed directly on the metal grates, which prevent contact with liquids that may have accumulated in the sumps. The interior of each shed and sump is coated with chemically-resistant epoxy paint. The designed sump storage capacity of each shed is 750 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of each shed (1,760 gallons; see Supplement 2-1). Shed 68 has three separate compartments (see Figure G-4), each having its own sump with individual capacities of 250 gallons. Sheds 69 and 70 have two separate compartments (see Figure G-4), each having its own sump. One compartment consists of two thirds of the surface area (and capacity) of Sheds 69 and 70. The capacity of this compartment's sump is 500 gallons; the smaller compartment's sump capacity is 250 gallons. Additional engineering details and technical specifications for these sheds are provided in Supplement G-1.

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Potential liquids that might accumulate within the sump areas (e.g., precipitation, liquids resulting from fire-suppression activities) are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

### Storage Shed 31

Storage Shed 31 is a prefabricated shed constructed of steel. It measures approximately 14 ft long, 13 ft wide, and 8 ft high (see Figure G-4). The shed sits on a concrete foundation that has a raised edge and is surrounded by asphaltic concrete that is sloped away from the shed to prevent run-on.

The shed has three separate liquid-tight recessed sumps in the concrete foundation that are each covered with a steel grate (see Figure G-4). Containers are stored on the steel grates, which prevent contact with liquids that may have accumulated in the sumps. The sumps and the concrete foundation are coated with chemically-resistant paint. Two of the sumps are approximately 6 ft long by 4 ft wide; the third sump is approximately 7 ft long by 6 ft wide. All three sumps are 5 inches deep. The total capacity of the three sumps is approximately 285 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the shed (1,320 gallons; see Supplement 2-1). Potential liquids that might accumulate within the sumps (e.g., precipitation, liquids resulting from fire-suppression activities) are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

### TA-54-32

TA-54-32 (see Figure G-5) consists of a concrete pad that is 116.5 ft long by 15.5 ft wide. The structure is covered by a 117.75-ft-long by 25.75-ft-wide canopy. The canopy provides protection from the weather. The concrete pad is bermed by a 1-ft-wide, 6- to 8-inch-high concrete curb. This curbed area is divided into six separate containment cells to segregate wastes with different hazard classes. The curb prevents run-on of storm water.

Each containment cell consists of a recessed sump covered with a grate flooring on which containers are stored (see Figure G-6); this prevents contact with liquids that may have accumulated in the sumps. The cells are separated by metal partitions above the flooring. The concrete sumps are treated with chemical-resistant epoxy filler-sealer and protective coating, providing an impervious seal to contain any potential leaks, spills, or accumulation of precipitation (see Supplement G-1 for details). Cells 1 and 6 are approximately 26.5 ft long by 13.5 ft wide by 1 ft deep, with a sump capacity of 2,675 gallons each. Cells 3 and 5 are approximately 16.8 ft long by 13.5 ft wide by 1 ft deep, with a sump capacity of 1,700 gallons each. Cells 2 and 4 are approximately 13.5 ft long by 11.2 ft wide by 1 ft deep, with a sump capacity of approximately 1,130 gallons each. These sump capacities exceed the amount necessary to hold 10% of the maximum

storage capacity for TA-54-32 (see Supplement 2-1). Potential liquids that might accumulate within the containment cells (e.g., precipitation, liquids resulting from fire-suppression activities) are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### TA-54-35

TA-54-35 (see Figure G-7) consists of a concrete pad that measures 31.5 ft long by 31.5 ft wide. The area is covered by a 136-ft-long, 48-ft-wide canopy that provides protection from the weather. The pad has a 6-inch-high concrete berm that prevents run-on and runoff of liquids. The bermed area has an elevated ramp on one side to allow access for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation and runoff of any accumulated liquids.

The bermed secondary containment area of the pad is approximately 29.5 ft long by 24.5 ft wide by 8 inches deep (see Figure G-8). Stored waste containers are elevated on pallets to prevent contact with any potential accumulated liquids. The concrete berms and the base of the concrete pad are treated with chemical-resistant epoxy filler-sealer and protective coating (see Supplement G-1 for details). This provides an impervious seal that will contain any leaks, spills, or accumulation of precipitation. The secondary containment capacity of the bermed area is approximately 3,570 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity for TA-54-35 (15,840 gallons; see Supplement 2-1). Potential liquids that might accumulate within the bermed area (e.g., precipitation, liquids resulting from fire-suppression activities) are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### TA-54-36

TA-54-36 (see Figure G-7) is a 33-ft-long by 31.5-ft-wide concrete pad. It is covered by a 136-ft-long, 48-ft-wide canopy that provides protection from the weather. The pad is surrounded by a 1-ft-wide berm that varies from 6 inches to 1 ft in height. The berm prevents run-on and runoff of liquids.

The bermed secondary containment area of the pad is approximately 30.5 ft long by 30 ft wide by 9 inches deep (see Figure G-8). The berm and the base of the concrete pad are treated with chemical-resistant epoxy filler-sealer and protective coating (see Supplement G-1 for details). This provides an impervious seal that will contain any leaks, spills, or accumulation of precipitation. The secondary containment capacity of the bermed area is approximately 4,595 gallons, which exceeds

the amount necessary to hold 10% of the maximum storage capacity for TA-54-36 (13,200 gallons; see Supplement 2-1).

The pad also contains a Perma-Con® structure. The Perma-Con® is constructed of 4-ft-wide, 8- or 4-ft-long, 22-gauge stainless-steel panels that interlock in a self-supporting structural steel framework. The Perma-Con® system can be assembled into multiple configurations (see Supplement G-1 for additional details on the Perma-Con®). The Perma-Con® is 28 ft wide by 28 ft long by 12 ft high. It is equipped with a 20-ft-long observation room that attaches to the main enclosure. The main enclosure has two personnel doors and an 8-ft-wide roll-up door. The floor in the main enclosure is the concrete pad covered with multiple layers of heavy duty plastic sheeting that are taped together and are extended approximately 1 ft up the sides of the Perma-Con®. The Perma-Con® has a tarp covering its roof to provide additional protection from the elements, thereby preventing the influx of precipitation, including melting snow.

All waste containers at TA-54-36 are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Potential liquids that might accumulate within the bermed area or the Perma-Con® (e.g., precipitation, liquids resulting from fire-suppression activities) are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### TA-54-58

TA-54-58 (see Figure G-7) measures 33 ft long by 31.5 ft wide. It is covered by a 136-ft-long, 48-ft-wide canopy that provides protection from the weather. The pad has a 1-ft-wide berm that varies from 6 inches to 1 ft in height. The berm prevents run-on and runoff of liquids. The bermed area has an elevated ramp on one side to allow access for equipment to move waste containers. The ramp also helps to prevent run-on of precipitation and runoff of any accumulated liquids.

The bermed secondary containment area of the pad is approximately 30.5 ft long by 25 ft wide by 6 inches deep (see Figure G-8). Stored waste containers are elevated on pallets to prevent contact with any potential accumulated liquids. The berm and the base of the concrete pad are treated with chemical-resistant epoxy filler-sealer and protective coating (see Supplement G-1 for details). This provides an impervious seal that will contain any leaks, spills, or accumulation of precipitation. The secondary containment capacity of the bermed area is approximately 2,850 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity for TA-54-58 (15,840 gallons;

see Supplement 2-1). Potential liquids that might accumulate within the bermed area (e.g., precipitation, liquids resulting from fire-suppression activities) are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### TA-54-39 and Containment Pad

TA-54-39 measures 40 ft long by 40 ft wide (see Figure G-9). It is a metal panel building set on a concrete foundation with a metal canopy attached to the south side of the building. The rectangular metal canopy measures 83 ft long by 46 ft wide.

There are two areas associated with TA-54-39 that provide secondary containment. These areas include Room 101, located inside the building, and a containment pad located at the south end of the building.

Room 101 (see Figure G-10) inside TA-54-39 has a 6-inch-high concrete curb that surrounds the room. The curb and floor of this 878 square foot (ft<sup>2</sup>) room are treated with chemical-resistant epoxy filler-sealer and protective coating (see Supplement G-1 for details). This provides an impervious seal that will contain any potential leaks, spills, or accumulation of precipitation. The secondary containment capacity for Room 101 is approximately 3,280 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity of the room (9,900 gallons; see Supplement 2-1).

The containment pad at the south end of TA-54-39 consists of two sections. The pad is covered by a metal canopy, which provides protection from the weather. The eastern section of the containment pad is constructed of asphaltic concrete and measures 83 ft long by 23 ft wide. The western section of the containment pad is approximately 58 ft long by 16 ft wide (see Figure G-10) and is surrounded by a 1-ft-high concrete curb, which prevents run-on and runoff of liquids. The concrete floor and curb are treated with chemical-resistant epoxy filler-sealer and protective coating (see Supplement G-1 for details). This provides an impervious seal that will contain any potential leaks, spills, or accumulation of precipitation. The curbed area slopes toward a sump for collection of any accumulated liquids. The secondary containment capacity for the western section of the TA-54-39 containment pad is approximately 7,120 gallons, which exceeds the amount necessary to hold 10% of the maximum storage capacity of this section of the containment pad (15,180 gallons; see Supplement 2-1).

All waste containers stored at TA-54-39 are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Potential liquids that might accumulate within Room 101 or within the western section of the containment pad (e.g., precipitation, liquids resulting from fire-suppression activities) are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### Asphaltic Concrete-Covered Areas

The asphaltic concrete-covered areas consist of a 4- to 6-inch-thick asphaltic concrete over a base course. Asphaltic concrete-covered areas are typically sloped 1 to 1.5% to facilitate drainage (see Figure 2-1). Some areas include a 6-inch-high, 8-inch-wide asphaltic-concrete berm to prevent run-on and runoff.

All waste containers on the asphaltic concrete-covered areas are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. All liquid wastes are stored on secondary containment pallets that have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any accumulated liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.2.4.2 Storage Shafts CSU

The Storage Shafts CSU is comprised of two retrievable storage shafts, Shafts 36 and 37. This CSU is located in the northwest corner of Area L. It stores highly radioactive mixed waste lead stringers that were used to hold targets in the particle beam operated at TA-53. Shaft 36 is constructed of 30-inch-diameter corrugated metal pipe (CMP); Shaft 37 is constructed of 48-inch-diameter CMP (see Figures G-11 and G-12). Each shaft has a welded metal plate and a 1-ft-deep concrete plug at the base. Shaft 36 is 27.25 ft deep; Shaft 37 is 35.75 ft deep. The annular space in the ground surrounding the CMP is filled with crushed tuff to 48 inches from the surface and concrete to the surface. Each shaft has a steel cover. At the surface, the CMP is raised above a concrete pad, which extends from the edge of the pipe to prevent infiltration of precipitation. The shafts are also covered with one or two 4-ft-long, 4-ft-wide concrete blocks that rest on railroad ties for stability.

The Storage Shafts CSU stores only solid-form wastes and, as stated above, a concrete pad extends outward from each shaft to prevent infiltration of precipitation. Therefore, in accordance with 20.4.1 NMAC § 264.175(c)(1), a containment system for this CSU is not required. The CMP is compatible with the lead stringer wastes; thus, the requirements of 20.4.1 NMAC § 264.172 are met. The shafts are kept closed during storage and the wastes are not stored in a manner that may rupture the shafts or cause them to leak, which meets the requirements of 20.4.1 NMAC § 264.173. Weekly inspections are conducted at this CSU, as described in Section C.2 of the Inspection Plan in Appendix C of the LANL General Part B. This satisfies the requirements of 20.4.1 NMAC § 264.174.

### G.3 AREA G CONTAINER STORAGE UNITS [20.4.1 NMAC, Subpart V, Part 264, Subpart I]

The following provides specific information on current facility operations and waste management practices at the Area G CSUs. This includes a discussion of security and access control, preparedness and prevention, hazards prevention, and design information for the Area G CSUs. This information is submitted to fulfill the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart I [6-14-00]. Detailed information is subject to change.

#### G.3.1 Security and Access Control [20.4.1 NMAC §§ 270.14(b)(4) and 270.14(b)(19)(viii); 20.4.1 NMAC § 264.14]

Security at the Area G CSUs is maintained with both artificial and natural barriers. These barriers prevent unauthorized entry of persons or livestock into Area G and satisfy the requirements of 20.4.1 NMAC §§ 264.14(a) and 264.14(b)(2) [6-14-00]. An 8-ft-high chain-link security fence with razor wire at the top surrounds the entire perimeter of Area G. Bilingual (i.e., English and Spanish) warning signs are posted on the fence at approximately 50- to 75-ft intervals and can be seen from any approach to this area. The legends on the signs indicate "Danger—Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are legible from a distance of 25 ft. Two entry gates are located on Mesita del Buey Road at the west end of Area G, and an entry station is located adjacent to the inner gate. TA-54 is patrolled by PTLA security personnel during non-operational hours to ensure that the gates are locked and that unauthorized entry has not occurred. The security fence is also inspected by on-site personnel and repairs are made, as necessary. In accordance with 20.4.1 NMAC § 270.14(b)(19)(viii) [6-14-00], the locations of the security fence, entry gates, and entry stations are shown on Figure 2-3 in Section 2.0 of this permit renewal application. In addition to the fence and entry station, cliffs on the north and south sides outside of Area G provide natural barriers to discourage unauthorized entry.

Access to the Area G CSUs is controlled by a gate. Authorized resident personnel must badge in/out at the magnetic badge reader to enter or leave through the gate. Individuals who do not have a DOE-issued badge must be escorted after signing the visitor's log located in the administrative area's access control building. These procedures limit access to the Area G CSUs and provide a means of tracking personnel on site, should there be an emergency or evacuation.

G.3.2 Preparedness and Prevention [20.4.1 NMAC, Subpart V, Part 264, Subpart C; and 20.4.1 NMAC § 270.14(b)(8)]

The following describes the emergency equipment available at the Area G CSUs to comply with the preparedness and prevention requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart C [6-14-00]. This includes the approximate locations of fire extinguishers, shower/eyewash stations, spill kits, windsocks, and communication/alarm systems.

Required Equipment [20.4.1 NMAC § 264.32]

PPE and emergency equipment supplies are stored at various locations throughout Area G. All personnel who may be required to use PPE and emergency equipment are trained in its use. In addition, essential information for emergency personnel is located at the main gate to Area G in the event of an emergency after normal working hours, or if Area G personnel are unavailable.

Area G is equipped with an audible alarm system to alert personnel of a fire or the need to evacuate the area. The alarms can be activated by pulling a fire alarm or by pushing the evacuation alarm button. Fire alarms, evacuation alarms, and strobe lights are in place at strategic locations to alert personnel of emergency conditions. These alarms are located throughout Area G and are connected to the LACFD through LANL's central alarm system at all times. Personnel working in Area G also carry pagers, cellular telephones, or two-way radios. Emergency paging telephones are in place so that information can be announced throughout the area. This equipment ensures that personnel can contact on-site and LANL emergency personnel at all times. Windsocks are at strategic locations to indicate wind direction and strength.

There are different types of monitoring equipment located at the Area G CSUs that are used to qualitatively and/or quantitatively evaluate airborne contaminants. Alarms and strobe lights warn personnel when airborne concentrations exceed preset limits.

Fire control equipment is located throughout Area G. This equipment includes halon, water, and/or carbon dioxide fire extinguishers, dry-chemical fire suppression systems, fire blankets, and several fire hydrants. Trained personnel can use the fire extinguishers and fire blankets to extinguish small, non-chemical fires. For larger fires, PTLA and the LACFD are alerted. The fire hydrants supply water at adequate volume and pressure to satisfy the requirements of 20.4.1 NMAC § 264.32 [6-14-00].

Eyewash stations, showers, and other first aid/decontamination equipment are maintained at various locations within Area G. They are for use by personnel in emergencies involving chemical and/or radiological materials. Waste characterization documentation and/or MSDSs are available in the event of a chemical exposure. First aid equipment can be used to treat injuries until trained medical personnel arrive at the scene.

Spill control equipment is maintained at various structures within Area G. Trained personnel use this equipment to mitigate small, containable spills if they know what has been spilled and are sure their actions will not put themselves or others at risk. PPE is also maintained at various structures within Area G and is available for use during routine and non-routine operations to protect personnel from exposure to chemical and radiological contaminants. Warning tapes and barricades are used to post areas and prevent unauthorized entry into restricted areas. Heavy equipment is also available at Area G to move heavy objects.

### G.3.3 Hazards Prevention [20.4.1 NMAC, Subpart V, Part 264, Subpart C; 20.4.1 NMAC § 270.14(b)(8)]

In accordance with 20.4.1 NMAC, Subpart V, Part 264, Subpart C [6-14-00], the Area G CSUs have been or will be designed and operated to minimize the possibility of a fire, explosion, or any unplanned releases of hazardous wastes or hazardous waste constituents which could threaten human health or the environment. The following discusses the procedures, equipment, and structures used at Area G to mitigate the effects of power outages. Prevention of run-on and runoff at Area G is discussed in Section 2.10.2 of this permit renewal application.

#### Mitigating Effects of Power Outages [20.4.1 NMAC § 270.14(b)(8)(iv)]

Electrical power is supplied to the Area G CSUs to operate lighting and other electrical and monitoring equipment. Evacuation alarms located throughout Area G are equipped with a battery backup and will continue to operate for eight hours during a power failure. Operations in Area G

are discontinued temporarily if electrical power is not restored quickly or if container handling equipment fails. However, neither a power nor an equipment failure would affect containment at the Area G CSUs.

Although not needed during daytime operations, emergency lighting for Area G consists of individual battery-pack halogen units located in TA-54-33 and TA-54-412. These lights are actuated by a loss of line voltage and are reset upon resumption of line voltage. A trickle charger keeps the self-contained battery pack at full charge and allows these lighting units a minimum of 30 minutes operability.

#### G.3.4 Area G CSUs [20.4.1 NMAC § 270.15]

The following describes the nine CSUs at Area G. The nine CSUs include the following:

- Storage Domes 229, 230, 231, and 232, and Pad 9;
- TA-54-412, Storage Dome 226, and Pad 1;
- Storage Dome 48 and Pad 3;
- Pad 10 (former Pads 2 and 4) and transuranic waste characterization facilities;
- Storage Domes 49 and 224; Storage Sheds 144, 145, 146, 177, 1027, 1028, 1030, and 1041; and Pads 5, 8, and 7;
- Storage Domes 153 and 283, and Pad 6;
- Storage Shed 8;
- TA-54-33, and;
- Storage Dome 375 and Pad 11.

General dimensions, containment features, and materials of construction are provided to fulfill the requirements of 20.4.1 NMAC §§ 270.15(a)(1) and (2) [6-14-00].

The CSUs at TA-54 are used to store containers of hazardous waste, MLLW, and MTRUW in solid and liquid form. Liquid wastes are stored primarily in structures that are designed for secondary containment; however, secondary containment pallets are also used. Secondary containment pallets are typically constructed of polyethylene or metal painted with a chemical-resistant coating (see Supplement G-1 for additional details, including compatibility). Polyethylene secondary containment pallets used at TA-54 are generally 50 inches long by 50 inches wide by 17 inches deep, with a designed capacity of 83 gallons. Two sizes of metal secondary containment pallets are typically used at TA-54. One is 52 inches long by 52 inches wide by 6.5 inches deep, with a designed capacity of 57 gallons; the other is 60 inches long by 60 inches wide by 6.5 inches deep, with a designed capacity of 77 gallons. The metal secondary containment pallets are coated with chemically-resistant urethane.

#### G.3.4.1 Storage Domes 229, 230, 231, and 232, and Pad 9 CSU

Storage Domes 229, 230, 231, and 232 are located on Pad 9 at the east end of Area G. The irregularly-shaped, asphaltic-concrete pad is approximately 570 ft long and 275 ft wide (see Figure 2-3). The asphaltic concrete is 4 to 6 inches thick. Each dome is approximately 246 ft long and 88 ft, 7 inches wide (see Figures G-13a, G-13b, G-14a, and G-14b). The domes consist of a rigid aluminum frame that supports a tensioned-membrane (see Supplement G-1 for additional details on domes). A series of aluminum I-beam trusses spanning the width of the structures comprise the dome framework. The membrane material is a polyester fabric coated with UV-stabilized plasticized PVC. The material is fungus-resistant and fire-retardant (i.e., self-extinguishing). The membrane is integrally connected to the frame to provide a fully tensioned fit. Each dome is equipped with personnel doors and a roll-up door for vehicle access. The domes are anchored to a concrete ring-wall with anchor bolts.

The interior floor perimeter of each dome is surrounded with a minimum 6-inch-high, 6-inch-wide asphaltic-concrete curb. A ramp is located at the vehicle entrance to each dome, which allows vehicles and container handling equipment to pass safely over the curbs and prevents run-on into the domes. The asphaltic-concrete pad is sloped 1 to 1.5% towards one end to allow any accumulated liquids to be contained within the curbed area at one end of the dome.

All waste containers at this CSU are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons.

The floor of Dome 230 is designed for secondary containment of liquids. The asphaltic-concrete floor is sloped (1%) towards a concrete sump at the east end of the dome (see Figure G-15). The asphaltic-concrete floor and curbs in Dome 230 are lined with a double layer of 40 mil high-density polyethylene (HDPE), and the sump is lined with a single layer of 40 mil HDPE, creating an impervious layer to contain any liquids that might accumulate (see Supplement G-1 for details on HDPE liners). The secondary containment capacity for Dome 230, which includes the sump and curbed area, is approximately 48,255 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the dome (330,000 gallons; see Supplement 2-1). Any liquid that might

accumulate within these storage domes (e.g., precipitation, liquids resulting from fire-suppression activities) is contained within the secondary containment pallets or curbed area or, at Dome 230, in the sump and curbed area. These liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.3.4.2 TA-54-412, Storage Dome 226, and Pad 1 CSU

TA-54-412 and Storage Dome 226 are located on Pad 1 in the northeastern portion of Area G (see Figure 2-3). The irregularly-shaped, asphaltic-concrete pad is approximately 358 ft long and 213 ft wide, and is 4 to 6 inches thick.

TA-54-412 (see Figure G-16) is a one story building that is approximately 220 ft long by 60 ft wide (13,200 ft<sup>2</sup>). It consists of two structures: an internal primary confinement structure that houses the DVRS processing operations; and an external secondary confinement structure, which surrounds the primary confinement structure. The external secondary confinement structure (hereinafter referred to as "building") provides protection from the elements and a temperature-controlled space for the internal structures and associated process equipment. A 16-ft by 16-ft roll-up vehicle-access door is located on the north end of the building. The roll-up vehicle access door opens to the secondary confinement structure area and serves as a pass-through for moving DVRS feed-stock waste into the primary confinement structure. There is also vehicle access on the south end of the building for removal of compacted waste from DVRS operations.

The floor and foundation of the building are concrete and the floor is painted with an epoxy sealant (see Supplement G-1 for details). The concrete slab provides a structural foundation for the building and the shearer/baler system, and provides a direct working surface for movement of FRP boxes and processing equipment. The concrete slab is above grade to direct potential run-on away from the building. The floor in the building is sloped to a sump that has a grating cover to provide traction and a level working surface. The sump is treated with chemical-resistant epoxy filler-sealer and protective coating (see Supplement G-1 for details).

The primary confinement structure is housed entirely within the building and consists of five interconnected enclosures or cells. The system is approximately 150 ft long by 50 ft wide by 16 ft high and sits directly on the sealed concrete floor. The primary confinement structure is constructed of 6-inch-thick, two-hour fire-rated sandwich panels made of 16-gauge steel and gypsum wallboard, measuring 40 ft wide by 4 or 8 ft long. The structure interlocks in a self-

supporting steel framework that can be assembled into multiple configurations. The primary confinement structure has five cells, each of which is used for a specific function of the DVRS process. The cells are equipped with both personnel and large roll-up doors so that personnel, equipment, and material can access the structure and move from one cell to the next.

A cell is used to sort and segregate transuranic (TRU) waste and MTRUW, and contains various tools used to dismantle the FRP boxes; other cells are used for decontamination and packaging; and a final cell contains the shearer and baler used to compact waste items. The shearing and baling process takes place within a tightly sealed compartment. Waste containers that need to be dismantled are processed using circular saws, reciprocating saws, hammers, pry bars, and other tools, as needed. Waste containers are moved with trucks, forklifts, air pallets, and hand dollies.

The primary and secondary confinement structures are built to meet criteria specified in DOE-STD-1020-92, "*Natural Phenomena Hazards Design and Evaluation Criteria for DOE Facilities*" (DOE, 1992), for Performance Criteria 2 structures. Performance Criteria 2 structures include active fire suppression, emergency communications, and confinement systems that provide important safety functions related to emergency handling or hazard recovery, and are designed to protect the health and safety of workers and visitors during active operations. The building contains fire protection piping and heating, ventilation, and air conditioning ducting, and is a two-hour code-compliant fire-rated building. Panels in the primary confinement structure are the same material as the two-hour fire-rated wall construction with additional supports. A dry-pipe fire-protection system provides coverage for the primary confinement structure. A water collection area in the south end of the building provides for containment of any potential leaks, spills, or accumulated water resulting from the activation of the fire protection system. Liquids that potentially accumulate within the sump area (e.g., liquids resulting from fire-suppression activities) are collected for characterization, as described in Section 2.6 of this permit renewal application. Negative ventilation air pressure is maintained throughout the building and primary confinement structure, with discharge through a multi-stage HEPA-filtered stack.

Storage Dome 226 is approximately 286 ft long and 88 ft, 7 inches wide (see Figures G-17a and G-17b). The design and materials of construction for Dome 226 are the same as for domes described in Section G.3.4.1. The dome is equipped with personnel doors and a roll-up door for vehicle access. It is anchored to the concrete ring wall with anchor bolts.

The interior floor perimeter of Dome 226 is surrounded with a minimum 6-inch-high, 6-inch-wide asphaltic-concrete curb. A ramp is located at the vehicle entrance to the dome, which allows vehicles and container handling equipment to pass safely over the curb and prevents run-on into the dome. The asphaltic-concrete pad is sloped 1 to 1.5% towards one end to allow any accumulated liquids to be contained within the curbed area at one end of the dome.

All waste containers at this CSU are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any liquid that might accumulate within this dome (e.g., precipitation, liquids resulting from fire-suppression activities) is contained within the secondary containment pallets or curbed area. These liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.3.4.3 Storage Dome 48 and Pad 3 CSU

Storage Dome 48 is located at the eastern end of Area G on Pad 3. Pad 3 is constructed of asphaltic concrete to a thickness of four inches, and is approximately 339 ft long and 50 ft wide. Storage Dome 48 is 285 ft long and 50 ft wide, and has a peak height of 24 ft (see Figure G-18). The design and materials of construction for Dome 48 are the same as for the domes described in Section G.3.4.1. The dome is equipped with a double-panel rolling door at the south end of the dome and eight personnel doors, located approximately every 80 ft along the dome's length, allow for adequate access both by vehicles and by personnel. The interior perimeter of the dome is surrounded by a 6-inch-high, 8-inch-wide asphaltic-concrete curb, which helps prevent run-on into and runoff from the dome. An asphaltic-concrete ramp located at the vehicle entrance allows vehicles and container handling equipment to pass safely over the curb. The dome is anchored to Pad 3 with standard drift pins.

All waste containers at this CSU are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any

liquid that might accumulate within this dome (e.g., precipitation, liquids resulting from fire-suppression activities) is contained within the secondary containment pallets or curbed area. These liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.3.4.4 Pad 10 (former Pads 2 and 4) and Transuranic Waste Characterization Facilities CSU

Pad 10 will be constructed at the location of former Pads 2 and 4. The irregularly-shaped pad is planned to measure approximately 350 ft long by 250 ft wide and will be constructed of asphaltic concrete (see Figures 2-3 and 2-8). The transuranic waste characterization facilities and container storage will be located on this pad.

The transuranic waste characterization facilities will consist of mobile and/or modular units equipped with instruments and equipment for waste characterization and repackaging. The transuranic waste characterization facilities may include the following: drum-loading or receiving unit(s); equilibration units(s); gas mobile characterization unit(s); mobile repack units; and nondestructive radioassay unit(s).

All waste containers at this CSU will be stored on pallets or otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes will have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any liquid that might accumulate (e.g., precipitation, liquids resulting from fire-suppression activities) will be contained within the secondary containment pallets. These liquids will be removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.3.4.5 Storage Domes 49 and 224; Storage Sheds 144, 145, 146, 177, 1027, 1028, 1030, and 1041; and Pads 5, 8, and 7 CSU

This CSU is located in the south-central portion of Area G, and consists of three pads, two domes, and eight sheds (see Figure 2-3). Storage Dome 49 is located on Pad 5, and Storage Dome 224 is located on Pad 8. The storage sheds are located on Pad 7. The pads are constructed of asphaltic concrete. Pad 5 is approximately 500 ft long, 65 ft wide, and 4 inches thick. It is sloped approximately 2% from north to south. Pad 8 is approximately 150 ft long, 95 ft wide, and 3 inches

thick. It is sloped approximately 1% from west to east. Pad 7 is approximately 200 ft long, 64 ft wide, and 4 inches thick. It is sloped approximately 1% from west to east.

Storage Dome 49 is 440 ft long and 60 ft wide, and has a peak height of approximately 26 ft (see Figure G-19). The design and materials of construction for Dome 49 are the same as for the domes described in Section G.3.4.1. The dome is equipped with a double-panel rolling door at the north end of the dome and six personnel doors to allow for adequate access both by vehicles and by personnel. The interior perimeter of the dome is surrounded by a 6-inch-high, 8-inch-wide asphaltic-concrete curb, which helps prevent run-on into and runoff from the dome. An asphaltic-concrete ramp located at the vehicle entrance to Dome 49 allows vehicles and container handling equipment to pass safely over the curb. The dome is anchored to Pad 5 with standard drift pins.

Storage Dome 224 is approximately 110 ft long and 60 ft wide, with a peak height of 26 ft (see Figure G-20). The design and materials of construction for Dome 224 are essentially the same as for the domes described in Section G.3.4.1. This dome is anchored to Pad 8 with anchor bolts. It is equipped with a single-panel roll-up door at the north end and four personnel doors to allow adequate access by vehicles and by personnel. A 1-ft, 8-inch wide by 2-ft, 4-inch deep concrete ring wall surrounds the interior of Dome 224.

Storage Sheds 144, 145, 146, and 177 are prefabricated sheds constructed of steel. Each shed measures 6 ft long, 5 ft wide, and 9 ft high (see Supplement G-1, Ideal Environmental Products, Model C). Access to each shed is obtained through a single door. The sheds are elevated by design, which prevents run-on. Each shed is constructed with a liquid-tight sump to ensure containment of any potential leaks or spills and to prevent runoff. The floor of each shed is constructed of steel and has a metal grate that covers the entire sump area. Containers are placed directly on the metal grates, which prevent contact with liquids that may have accumulated in the sumps. The interior of each shed and sump is coated with chemically-resistant epoxy paint. The designed sump storage capacity of each shed is 120 gallons (see Supplement G-1, Ideal Environmental Products, Model C), which exceeds the amount necessary to hold 10% of the total storage capacity of each shed (330 gallons; see Supplement 2-1). Additional engineering details and technical specifications for these sheds are provided in Supplement G-1.

Storage Sheds 1027, 1028, 1029, and 1041 have the same basic design specifications as Sheds 68, 69, and 70 described in Section G.2.4.1. Each shed is equipped with three sets of double doors

on one side of the shed for ease of access. Sheds 1027, 1028, 1030, and 1041 contain a single compartment and sump within each shed (see Figure G-21). The designed storage capacity of each sump is 750 gallons, which exceeds the amount necessary to hold 10% of the total capacity of each shed (1,760 gallons; see Supplement 2-1). Additional engineering details and technical specifications for these sheds are provided in Supplement G-1.

Dome 224 is designed for secondary containment of liquids (see Figure G-22). The asphaltic-concrete floor is sloped 0.5% towards a concrete sump in the center of the dome. A ramp at the entrance to the dome allows movement of waste containers and prevents run-on. The floor, sump, and curbs are lined with a double layer of HDPE (80 mil and 40 mil) creating an impervious layer to contain any liquids that might accumulate (see Supplement G-1 for details on HDPE liners). The secondary containment capacity for Dome 224 is approximately 19,150 gallons, which exceeds the amount necessary to hold 10% of the total storage capacity of the dome (95,040 gallons; see Supplement 2-1).

All waste containers at this CSU are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any liquid that might accumulate within the domes and sheds (e.g., precipitation, liquids resulting from fire-suppression activities) is contained within the secondary containment pallets, curbed areas, or sumps (where present). These liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.3.4.6 Storage Domes 153 and 283 and Pad 6 CSU

This CSU is located in the north-central portion of Area G, and consists of two domes on a pad (see Figure 2-3). Storage Domes 153 and 283 are located on Pad 6. The design and materials of construction for Domes 153 and 283 are the same as for domes described in Section G.3.4.1. Pad 6 is constructed of asphaltic concrete, and is approximately 633 ft long, 99 ft wide, and 4 inches thick. It is sloped approximately 1.2% from west to east.

Dome 153 is approximately 326 ft long and 60 ft wide, with a peak height of 26 ft (see Figure G-23). A double-panel rolling door is located at the west end of the dome, and 10 personnel doors are

located approximately every 40 to 125 ft along the dome's length. Dome 283 is approximately 250 ft long and 60 ft wide, with a peak height of 26 ft (see Figure G-24). A double-panel rolling door is located at the east end of the dome, and 10 personnel doors are located approximately every 50 ft along the dome's length. These accesses allow adequate traffic flow of vehicles and personnel into and out of the dome. A 6-inch-high, 8-inch-wide asphaltic-concrete curb surrounds the interior perimeter of both domes to help prevent run-on and runoff. An asphaltic-concrete ramp is located at the vehicle entrance of each dome to allow vehicles and container-handling equipment to pass safely over the curb. Domes 153 and 283 are anchored to Pad 6 with standard drift pins.

All waste containers at this CSU are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any liquid that might accumulate within the domes (e.g., precipitation, liquids resulting from fire-suppression activities) is contained within the secondary containment pallets and curbed areas. These liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.3.4.7 Storage Shed 8 CSU

Storage Shed 8 is located in the north-central portion of Area G (see Figure G-25). The shed is 40 ft long and 16 ft wide, and has a 14-ft-high galvanized steel roof that slopes to the north. The siding of Storage Shed 8 is constructed of galvanized steel and the foundation is constructed of concrete. Two overhead doors and one personnel door on the south side of the shed allow both vehicles and personnel to access the shed. The shed also has a 6-inch high, 8-inch-wide asphaltic-concrete curb to prevent runoff. A concrete slab on the south side of the shed is sloped away from the shed's foundation to prevent run-on.

All waste containers at this CSU are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any liquid that might accumulate (e.g., precipitation, liquids resulting from fire-suppression activities) is

contained within the secondary containment pallets and curbed area. These liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.3.4.8 TA-54-33 CSU

TA-54-33 is located in the north-central portion of Area G and consists of a dome attached to a concrete-block building (see Figure G-26). This CSU is used for waste storage and potential or future waste characterization activities. The dome and building are located on a concrete foundation surrounded by an asphaltic-concrete pad. The concrete slab is 8 inches thick and overlies 6 inches of base course. The concrete-block building attached to the dome is approximately 40 ft long and 34 ft wide. The dome is 157 ft long and 50 ft wide, with a peak height of 24 ft. A double-panel rolling door is located at the west end of the dome for vehicle access. A single-panel rolling door is located at the southeast end of the dome for container-handling access.

Two personnel doors are located approximately 40 ft apart along the north wall of the dome. Two additional personnel doors are located in the concrete-block building; one on the west side, and one on the east side. In addition, two overhead doors are located on the north side of the building to allow free movement of personnel and container-handling equipment between the building and the dome. The interior perimeter of the dome is surrounded with a 6-inch-high, 8-inch-wide concrete curb to prevent run-on and runoff. The concrete floors of Rooms 100, 100A, 100B, 100C, and 105 also slope inward to prevent runoff.

The design and materials of construction for the TA-54-33 dome are the same as for domes described in Section G.3.4.1. The dome's aluminum frame is directly connected to the building, which extends approximately 5 ft into the dome. Inside the dome, the concrete foundation is sloped to a 6-inch-wide centralized concrete drainage trench that is covered with 12-inch-wide steel grating. The trench slopes toward a steel sump located at the east end of the dome. Two additional trenches, located in Rooms 100A and 100B, are perpendicular to and feed into the main trench. A floor drain in Room 105 connects with the trench in Room 100A.

The steel sump is located within a concrete basin that has 8-inch-thick walls, a 9-inch-thick base, and measures approximately 15 ft long by 7 ft wide by 6 ft deep. The sump is approximately 14 ft long by 6.5 ft wide by 5 ft deep and has a capacity of 3,473 gallons. A primary holding tank associated with the sump is located in a concrete basin that is 15 ft long by 12 ft wide by 5.5 ft deep and has a capacity of approximately 7,405 gallons. A secondary holding tank associated with the sump is located in a separate concrete basin that is 12 ft long by 12 ft wide by 5.5 ft deep and has a

capacity of approximately 5,924 gallons. These basins have the capacity to contain any spills or leaks resulting from a potential overflow or breach of the holding tanks.

The discussions of the trench and holding tank system at TA-54-33 are provided for completeness and informational purposes only. The trench and tank system, including all associated structures and systems (e.g., basins, piping) do not require a Resource Conservation and Recovery Act (RCRA) permit.

All waste containers at this CSU are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any liquid that might accumulate (e.g., precipitation, liquids resulting from fire-suppression activities) is contained within the curbed area of the dome, within the sump, within the building, or within secondary containment pallets. These liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.3.4.9 Storage Dome 375 and Pad 11 CSU

Storage Dome 375 is located in the western portion of Area G and is used for storage of hazardous waste, MLLW, and MTRUW. It measures approximately 300 ft long by 100 ft wide (see Figure G-27). The building is an aluminum A-frame truss design that is anchored to a concrete ring wall. The dome is of modular construction utilizing a membrane/fabric covering. It is equipped with 14 personnel doors and two roll-up doors, one each at the east and west ends of the building. Ramped entrances allow for safe movement of container handling equipment and vehicle access. The storage dome is located on Pad 11, which is constructed of asphaltic-concrete and measures approximately 478 ft long by 137 ft wide. Pad 11 is approximately 4 inches thick and slopes approximately 1 to 2% to the southeast.

All waste containers at this CSU are stored on pallets or are otherwise elevated (e.g., metal supports, wooden timbers) to prevent contact with accumulated liquids. Secondary containment pallets used to store liquid wastes have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container stored on them, whichever is greater. Secondary containment pallets typically used at TA-54 have a capacity ranging from 57 to 83 gallons. Any

liquid that might accumulate (e.g., precipitation, liquids resulting from fire-suppression activities) is contained within the building and/or within secondary containment pallets. These liquids are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.4 TA-54 WEST CONTAINER STORAGE UNITS [20.4.1 NMAC, Subpart V, Part 264, Subpart I]

The following provides specific information on current facility operations and waste management practices at the TA-54 West CSUs. This includes a discussion of security and access control, preparedness and prevention, hazards prevention, and design information for the TA-54 West CSUs. This information is submitted to fulfill the requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart I [6-14-00]. Detailed information is subject to change.

##### G.4.1 Security and Access Control [20.4.1 NMAC §§ 270.14(b)(4) and 270.14(b)(19)(viii); 20.4.1 NMAC § 264.14]

Security at TA-54 West is maintained by both artificial and natural barriers. These barriers prevent unauthorized entry of persons or livestock into TA-54 West and satisfy the requirements of 20.4.1 NMAC §§ 264.14(a) and 264.14(b)(2) [6-14-00]. An 8-ft-high chain-link security fence with barbed wire at the top surrounds the entire perimeter of TA-54 West. Bilingual (i.e., English and Spanish) warning signs are posted on the fence at 50- to 75-ft intervals and can be seen from any approach to this area. The legends on the signs indicate "Danger—Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are legible from a distance of 25 ft. TA-54 West is patrolled by PTLA security personnel during non-operational hours to ensure that the gates are locked and that unauthorized entry has not occurred. The entire security fence is also inspected by on-site personnel and repairs are made, as necessary. In accordance with 20.4.1 NMAC § 270.14(b)(19)(viii) [6-14-00], the locations of the security fence, entry gates, and entry stations are shown on Figure 2-14 in Section 2.0 of this permit renewal application. In addition to the fence and entry station, cliffs on the north side of TA-54 West provide a natural barrier to discourage unauthorized entry.

Authorized individuals are permitted access to the Indoor CSU at TA-54-38 through the badge reader at the west entrance to the building. Visitors, subcontractors, and other personnel that do not have a badge must gain access to the building by contacting an authorized person, and must sign the visitor logbook. When leaving TA-54-38 to go to the adjacent building (TA-54-34) or the Outdoor CSU, it is not necessary for authorized personnel to use the badge reader to exit TA-54-

38. If leaving TA-54 West completely, however, authorized personnel must badge out at the badge reader. Visitors must always sign out on the visitor logbook when leaving the building.

G.4.2 Preparedness and Prevention [20.4.1 NMAC, Subpart V, Part 264, Subpart C; 20.4.1 NMAC § 270.14(b)(8)]

The following presents information on the emergency equipment available at the TA-54 West CSUs to comply with the preparedness and prevention requirements of 20.4.1 NMAC, Subpart V, Part 264, Subpart C [6-14-00]. This includes the approximate locations of the fire extinguishers, shower/eyewash stations, spill center, and communication systems.

Required Equipment [20.4.1 NMAC § 264.32]

TA-54-38 is equipped with an audible alarm system to alert personnel of fire or the need to evacuate the area. Fire alarm pull stations are located throughout the building and can be activated in the event of a fire. Strobe lights mounted at the fire alarms and at TA-54-34, just north of TA-54-38, flash upon activation of the fire alarms to visually alert personnel. The alarm system can also be activated by using evacuation alarm buttons located near the entrances to the building. Upon activation of the evacuation alarm system, horns sound to alert personnel of emergency conditions. The building's manual fire alarm pull stations at TA-54 West are connected to the LACFD through LANL's central alarm system at all times. The evacuation alarm system is a local system that notifies occupants in TA-54-38 and TA-54-34 of a local emergency. Additionally, a roll-up door between the high and low bays has heat sensitive links attached to a safety chain that melt at a certain temperature and cause the door to close.

TA-54-38 is also equipped with telephones to provide adequate communication and to summon external emergency assistance, if necessary. Paging telephones are located throughout the building and are used to contact on-site personnel. Paging telephones are also used in the event of an emergency to communicate the nature and location of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Additionally, an emergency telephone is located outside the main entry area. Personnel working within the building can also use these telephones to summon assistance from local emergency response teams in case of emergency.

Fire control equipment is available for use within TA-54-38 and at the Outdoor CSU. Portable halon fire extinguishers are located in the high bay, low bay, and at the Outdoor CSU. The fire extinguisher located by the east personnel entrance door in the low bay can also be used at the

loading dock. Depending on the size of the fire and the fuel source, fire extinguishers can be used by on-site personnel. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. TA-54-38 is equipped with a smoke-activated dry-pipe sprinkler system in the low bay and with heat-activated dry-pipe fire suppression systems in the high bay and at the loading dock. A fire hydrant installed according to National Fire Protection Association standards is located approximately 220 ft west of TA-54-38 near the west entrance to TA-54 West. Water is supplied to the fire hydrant by a municipal water system through 8-inch pipes at an adequate volume and pressure to satisfy the requirements of 20.4.1 NMAC § 264.32 [6-14-00].

A portable chemical spill center is maintained within TA-54-38. It contains sorbents and PPE. Personnel working anywhere within the building have access to this spill center. Trained personnel use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk. Personnel decontamination equipment available includes a safety shower and eyewash located in the high bay and a safety shower and eyewash on the loading dock.

G.4.3 Hazards Prevention [20.4.1 NMAC, Subpart V, Part 264, Subpart C; 20.4.1 NMAC § 270.14(b)(8)]

In accordance with 20.4.1 NMAC, Subpart V, Part 264, Subpart C [6-14-00], the TA-54 West CSUs are designed and operated to minimize the possibility of a fire, explosion, or any unplanned releases of hazardous wastes or hazardous waste constituents which could threaten human health or the environment. The following discusses the specific procedures, equipment, and structures used at TA-54 West to mitigate the effects of power outages. Prevention of run-on and runoff at TA-54 West is discussed in Section 2.10.3 of this permit renewal application.

Mitigating Effects of Power Outages [20.4.1 NMAC § 270.14(b)(8)(ii)]

Electrical power is supplied to TA-54-38 through a transformer located north of the building. In the event of a power failure, operations in the building cease. If electrical power is not restored quickly or if container handling equipment fails, containment at the TA-54 West CSUs is not affected. Monitoring equipment alarms are operated by supplied power, but will continue to operate on a backup battery. Emergency lighting is equipped with backup batteries.

G.4.4 TA-54 West CSUs [20.4.1 NMAC § 270.15]

The following describes the two CSUs at TA-54 West. The two CSUs include the Indoor CSU and the Outdoor CSU. The Indoor CSU is comprised of the low bay and the high bay at TA-54-38. The Outdoor CSU is comprised of the storage pad surrounding the north, east, and south sides of TA-54-38 and the loading dock at TA-54-38. The CSUs at TA-54 West are used to store MLLW and MTRUW in solid form. General dimensions, containment features, and materials of construction are discussed in this section to fulfill the requirements of 20.4.1 NMAC §§ 270.15(a)(1) and (2) [6-14-00].

#### G.4.4.1 Indoor CSU

TA-54-38 is constructed of 36-ft-high precast concrete panel walls topped by prestressed double-T concrete roof sections. Its foundation consists of a 6-inch reinforced concrete slab on compacted fill. The building is divided into several offices and houses the Indoor CSU, which includes the low bay and the high bay (see Figure G-28).

The low bay is approximately 40 ft wide and 34 ft long. An 8-ft-wide by 12-ft-high roll-up door is located at the east end and opens to an outdoor loading dock. A second 8-ft-wide by 12-ft-high roll-up door is located in the southeast corner and opens into the high bay. The walls and floor of the low bay are coated with industrial grade enamel paint.

The high bay is approximately 40 ft wide and 80 ft long. The high bay is used for loading TRU waste and MTRUW into Transuranic Package Transporter-II containers. It is equipped with 14-ft-wide by 18-ft-high roll-up doors on the east and west ends to allow convenient, indoor loading of the tractor-trailers that transport shipments of waste to the Waste Isolation Pilot Plant. The high bay floor is unpainted and slopes at an angle of 1.5 degrees toward a central trench and sump. The trench is 5 inches wide, 6 inches deep, and 50 ft long. The entire length of the trench is covered with a metal grate and is designed to hold precipitation and snow melt from tractor-trailers. The sump is locked out. Potential liquids that accumulate within the sump area (e.g., precipitation, liquids resulting from fire-suppression activities) are removed and collected for characterization, as described in Section 2.6 of this permit renewal application.

#### G.4.4.2 Outdoor CSU

The Outdoor CSU consists of the loading dock at TA-54-38 and the storage pad located on the north, east, and south sides of TA-54-38. The loading dock is 16 ft wide by 38 ft, 10 inches long

and is covered by a metal awning. The platform is constructed of 6-inch cast-in-place concrete and is located approximately 4 inches above grade.

The boundary of the storage pad is delineated by the fence surrounding the pad. The approximate dimensions of the pad at the Outdoor CSU are shown on Figure 2-14. The pad is constructed of asphaltic concrete to a thickness of approximately 4 inches and slopes toward the curbed edges (see Figure 2-14 in Section 2.0). This slope allows for storm water to run off the pad. Storage containers on this pad are elevated either by design or on a pallet.

Mobile radioassay trailers and storage sheds for supplies and equipment are also stored on the pad at the Outdoor CSU.

## G.5 REFERENCES

Ball, T., M. Everett, P. Longmire, D. Vaniman, W. Stone, D. Larssen, K. Greene, N. Clayton, and S. McLin, 2002, "Characterization Well R-22 Completion Report," Los Alamos National Laboratory report LA-13893-MS, Los Alamos New Mexico.

DOE, 1992, "*Natural Phenomena Hazards Design and Evaluation Criteria for DOE Facilities*," DOE-STD-1020-92.

LANL, 1998, "Hydrogeologic Workplan," May 1998, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1995, "Geologic and Hydrologic Records of Observation Wells, Test Holes, Test Wells, Supply Wells, Springs, and Surface Water Stations in the Los Alamos Area," LA-12883-MS, January 1995.

**Table G-1**

**Regulatory References and Corresponding Permit Renewal Application Location**

Regulatory Citation(s)	Description of Requirement	Location in this Document
§270.15	Specific requirements for containers:	
§270.15(a)	A description of the containment system to demonstrate compliance with §264.175 including at a minimum:	2.6, G.2.4, G.3.4, G.4.4
§270.15(a)(1)	Basic design parameters, dimensions, and materials of construction	G.2.4, G.3.4, G.4.4
§270.15(a)(2)	How the design promotes drainage or how containers are kept from contact with standing liquids in the containment system	2.6, G.2.4, G.3.4, G.4.4
§270.15(a)(3)	Capacity of the containment system relative to the number and volume of containers to be stored	2.6, Supplement 2-1
§270.15(a)(4)	Provisions for managing run-on	2.10, G.2.4, G.3.4, G.4.4
§270.15(a)(5)	How accumulated liquids can be analyzed and removed to prevent overflow	2.6
§270.15(b)	For storage areas that store containers holding wastes that do not contain free liquids, a demonstration of compliance with §264.175(c) includes:	2.1.3.2
§270.15(b)(1)	Test procedures and results or other documentation or information to show that the wastes do not contain free liquids	2.1.3.2
§270.15(b)(2)	A description of how the storage area is designed or operated to drain or remove liquids or how containers are kept from contact with standing liquids	2.1.3.2, G.4.4
§270.15(c)	Provide sketches, drawings, or data demonstrating compliance with §264.176 (location of buffer zone and containers holding ignitable or reactive wastes) and §264.177(c) (location of incompatible wastes), where applicable	2.8
§270.15(d)	Where incompatible wastes are stored or otherwise managed in containers, a description of the procedures used to ensure compliance with §264.177(a) and (b) and §264.17(b) and (c)	2.8
§270.15(e)	Information regarding air emission control equipment as required in §270.27	G.1.6
§270.27(a)	If applicable, specific information requirements for air emissions for containers:	G.1.6

**Table G-1 (Continued)**

**Regulatory References and Corresponding Permit Renewal Application Location**

Regulatory Citation(s)	Description of Requirement	Location in this Document
§270.27(a)(2)	Identification of each container area subject to the requirements of 40 CFR Part 264, Subpart CC and certification by the owner or operator that the requirements are met	G.1.6
§270.27(a)(3)	Documentation that each enclosure used to control air emissions from containers are in accordance with the requirements of §264.1086(b)(2)(i) includes information prepared by the owner or operator or manufacturer or vendor describing the enclosure design and certification that the enclosure meets the specifications listed in §265.1087(b)(2)(ii)	Not applicable (NA)
§270.27(a)(5)	Documentation for each closed-vent system and control device installed in accordance with the requirements of §264.1087 that includes design and performance information as specified in §270.24(c) and (d)	NA
§270.27(a)(6)	An emission monitoring plan for both Method 21 and control device monitoring methods. The plan must include:	NA
§270.27(a)(6)	monitoring point(s)	NA
§270.27(a)(6)	monitoring methods for control devices	NA
§270.27(a)(6)	monitoring frequency	NA
§270.27(a)(6)	procedures for documenting exceedances	NA
§270.27(a)(6)	procedures for mitigating noncompliances	NA